CLAIMS

We claim:

1. Flow features in an inkjet printhead, the flow features comprising:

a plurality of first channels, each of the plurality of first channels having a first length and positioned to fluidly communicate with an ink reservoir, and each of the plurality of first channels terminating in a first nozzle;

a plurality of second channels, each of the plurality of second channels having a second length greater than the first length and positioned to fluidly communicate with the ink reservoir, each of the plurality of second channels terminating in a second nozzle, each second nozzle being larger than each first nozzle.

2. The flow features set forth in claim 1, wherein the first channels, the first nozzles, the second channels and the second nozzles are defined in a nozzle plate by laser ablation.

3. The flow feature set forth in claim 1, wherein the first nozzles and the second nozzles are defined in a nozzle plate, and the first channels and the second channels are defined in a layer distinct from the nozzle plate.

4. The flow feature set forth in claim 1, further comprising:

a plurality of first chambers, each first chamber positioned in fluid communication with a first channel and a first nozzle; and

a plurality of second chambers, each second chamber positioned in fluid communication with a second channel and a second nozzle.

5. The flow feature set forth in claim 4, wherein the first nozzles and the second nozzles are defined in a nozzle plate, and the first channels, the first chambers, the second channels and the second chambers are defined in a layer distinct from the nozzle plate.

6. The flow feature set forth in claim 2, wherein the nozzle plate is constructed of at least one of polyimide and phenolic.

7. The flow feature set forth in claim 1, wherein each first nozzle is used to produce a smaller ink drop-volume than that of each second nozzle.

8. The flow feature set forth in claim 2, further comprising a recess defined in the nozzle plate and in fluid communication with the ink reservoir, the recess having an axial direction.

9. The flow features set forth in claim 8, wherein each of the plurality of first channels and each of the plurality of second channels comprise an axial direction generally perpendicular to the axial direction of the recess.

10. The flow features set forth in claim 1, wherein each of the first channels have a cross-sectional dimension no greater than a cross-sectional dimension of each of the first nozzles.

11. The flow features set forth in claim 4, wherein each of the first chambers is separated from each of the second channels by a first distance, and wherein each of the first chambers is sized to maximize the first distance.

12. The flow features set forth in claim 1, wherein each first nozzle produces higher resolution printing than each second nozzle.

13. The flow features set forth in claim 1, wherein each second nozzle is sized to inhibit flooding of ink from each second nozzle.

14. The flow features set forth in claim 1, wherein each of the first channels is sized to damp the ink as it flows in each of the first channels to reduce flooding from each first nozzle.

15. Flow features in an inkjet printhead, the flow features comprising:

a first channel in fluid communication with an ink reservoir and having a first length,

a second channel in fluid communication with the ink reservoir and having a second length greater than the first length,

a first nozzle in fluid communication with the first channel and having a first cross-sectional area, and

a second nozzle in fluid communication with the second channel and having a second cross-sectional area greater than the first cross-sectional area.

16. The flow features set forth in claim 15, wherein the ink reservoir is defined in a housing of the printhead, the first nozzle is positioned adjacent an end of the first channel opposite the ink reservoir, and wherein the second nozzle is positioned adjacent an end of the second channel opposite the ink reservoir.

17. The flow features set forth in claim 15, wherein the first nozzle and the second nozzle are defined in a nozzle plate, and the first channel and the second channel are defined in a layer distinct from the nozzle plate.

18. The flow features set forth in claim 15, wherein the first channel, the first nozzle, the second channel and the second nozzle are formed in a nozzle plate by laser ablation.

19. The flow features set forth in claim 18, wherein the nozzle plate is constructed of at least one of polyimide and phenolic.

20. The flow features set forth in claim 15, wherein the flow features further comprise:

a first chamber positioned between the first channel and the first nozzle and in fluid communication with the first channel and the first nozzle, and

a second chamber positioned between the second channel and the second nozzle and in fluid communication with the second channel and the second nozzle.

21. The flow features set forth in claim 20, wherein the inkjet printhead further comprises a chip having a first heat transducer and a second heat transducer, the chip positioned adjacent a nozzle plate, in which the flow features are defined, such that the first heat transducer is positioned adjacent the first chamber to heat the ink in the first chamber, and such that the second heat transducer is positioned adjacent the second chamber to heat the ink in the second chamber.

22. The flow features set forth in claim 21, wherein the inkjet printhead further comprises a film positioned between the chip and the nozzle plate to protect the chip from the ink.

23. The flow features set forth in claim 20, wherein the first chamber is separated from the second channel by a first distance, and wherein the first chamber is sized to maximize the first distance.

24. The flow features set forth in claim 20, wherein the first nozzle and the second nozzle are defined in a nozzle plate, and the first channel, the first chamber, the second channel and the second chamber are defined in a layer distinct from the nozzle plate.

25. The flow features set forth in claim 15, wherein the first channel is one of a plurality of first channels, the second channel is one of a plurality of second channels, the first nozzle is one of a plurality of first nozzles, and the second nozzle is one of a plurality of second nozzles.

26. The flow features set forth in claim 15, wherein the first nozzle produces ink drops having a smaller volume than ink drops produced by the second nozzle.

27. The flow features set forth in claim 15, wherein the first channel is sized to damp the ink as it flows in the first channel to reduce flooding from the first nozzle.

28. The flow features set forth in claim 15, wherein the inkjet printhead is used to create at least one of a high-quality print and a draft-mode print.

29. The flow features set forth in claim 15, wherein the first channel is sized to inhibit particles of the ink having a dimension larger than a cross-sectional dimension of the first nozzle from entering the first channel.

30. The flow features set forth in claim 15, wherein the second nozzle is sized to inhibit the ink from flooding out of the second nozzle.

31. A method for producing various ink drop-volumes using an inkjet printhead, the method comprising:

providing a housing defining an ink reservoir containing ink;

providing a nozzle plate coupled to the housing;

defining a first channel in the nozzle plate in fluid communication with the ink reservoir, the first channel having a first length;

defining a first nozzle in the nozzle plate in fluid communication with the first channel;

defining a second channel in the nozzle plate in fluid communication with the ink reservoir, the second channel having a second length greater than the first length; and

defining a second nozzle in the nozzle plate in fluid communication with the second channel, the second nozzle being larger than the first nozzle.

32. The method set forth in claim 31, further comprising:

providing a first chamber in fluid communication with the first channel and the first nozzle, the first chamber separated from the second channel by a first distance; and

dimensioning the first chamber to maximize the first distance.

32. The method set forth in claim 31, wherein defining a first channel and defining a second channel include laser ablating the nozzle plate.

33. The method set forth in claim 31, damping the ink flowing in the first channel more than ink flowing in the second channel.

34. The method set forth in claim 31, further comprising dimensioning the first channel to have a cross-sectional dimension no greater than a cross-sectional dimension of the first nozzle to inhibit particles of the ink from clogging the first nozzle.

35. The method set forth in claim 31, wherein the first channel has a smaller cross-sectional area than that of the second channel, wherein the first nozzle is in fluid communication with the first channel to inhibit clogging of the first nozzle; and wherein the second nozzle is in fluid communication with the second channel to inhibit ink from flooding out of the second nozzle.

36. The method set forth in claim 31, further comprising producing ink drops with the first nozzle having a smaller volume than ink drops produced by the second nozzle.